619 MECHANICAL WORK

619.01 DESCRIPTION

Mechanical work shall consist, where applicable, of furnishing, installing, testing, and placing in satisfactory operation all ventilation equipment, pumping equipment, and other equipment as specified herein and in the contract documents to make a complete mechanical system.

619.02 CODES AND STANDARDS

The materials, equipment, tests, and installations shall conform to the latest published applicable codes and standards of the organizations mentioned below:

District of Columbia Sanitary Codes

American Society of Mechanical Engineers

American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., ASHRAE Guides and Data Books

Air Moving and Conditioning Association

Society of Automotive Engineers

National Electrical Manufacturers Association

American Society for Testing Materials

Institute for Electrical and Electronics Engineers

National Fire Protection Association

American National Standards Institute

Underwriter's Laboratories, Inc.

Hydraulic Institute Test Code

619.03 MATERIALS

Materials for mechanical work shall be as specified in the contract documents.

619.04 SHOP AND WORKING DRAWINGS

All shop and working drawings relating to mechanical work shall be submitted as specified in 105.02.

619.05 VENTILATION SYSTEM

The ventilation system shall consist of air supply fans, forced exhaust fans, exhaust fans, motors, transmissions, duct work, and other equipment as specified herein and in the contract documents in strict compliance with all codes and standards cited in 619.02.

All fans and parts thereof shall be capable of satisfactorily withstanding the effect of all stresses and loads under the starting and operating conditions specified for fan motors.

The Contractor shall furnish the Engineer with certified copies of the performance curves for the fans he proposes to furnish and install prior to approval of fans by the Engineer. Performance curves shall be plotted for the operation of the fan with abscissa as cubic feet per minute and ordinates as:

1. Total pressure in inches of water

2. Static pressure in inches

3. Total efficiency in percentage

4. Static efficiency in percentage

5. Horsepower input to the fan

6. Horsepower output of driving motor

Typical curves for fans are not acceptable.

In addition to fan curve, each fan shall have a brass or stainless steel nameplate showing the name of the manufacturer, type of fan, fan number, shop order number, serial number, cubic feet of air per minute, and static pressure at rated maximum operating speed. Name-plate shall be fastened on the fan with self-tapping screws.

619.06 PUMPING SYSTEM

The Contractor shall furnish, install, test, and place in satisfactory operation all pumping equipment and accessories as specified in the contract documents or as required for a complete installation in strict compliance with all codes and standards referred to in 619.02.

The Contractor shall furnish certified characteristic curves of the pump along with other data to the Engineer for his approval of the pumps. The performance curves shall show the total head, horsepower, efficiency, and volume of water delivered for the full range from the point of no delivery to that of free delivery.

619.07 MOTORS

The Contractor shall furnish and install the type and size of motors and associated equipment as specified in the contract documents.

The Contractor shall furnish certified performance curves before the motors are approved. Performance curves shall include the speed, starter current, power factor, efficiency, horsepower output, and kilowatt input, all plotted against torque from 50 percent to 125 percent of full load at rated voltage.

Each motor shall have a brass or stainless steel nameplate showing the name of the manufacturer, type of motor according to NEMA design, full load current, voltage, speed, temperature rise (by resistance), and service factor. Nameplate shall be fastened on the motor with self-tapping screws.

The motor conduit box and bearings shall be one size larger than the standard size.

Each motor shall be given the standard NEMA commercial test and the Engineer shall be furnished, for approval, a notarized copy of such tests, before the motors leave the place of manufacture.

619.08 MEASURE AND PAYMENT

The unit of measure for Mechanical Work will be job. Payment will be made at the contract lump sum price, which payment will include the cost of all equipment, manufacturer's guarantees, tests, and all labor, materials, tools and incidentals necessary to complete the work.